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Verehrer steht es fest, dass der seltene Tag nicht vorbei gehen darf ohne ein dauerndes Zeichen der Erinnerung. Wir gedenken von einem hervorragenden Bildhauer 'Leuckart's Marmorbüste' herstellen zu lassen und sie zugleich mit einer künstlerisch ausgestatteten Adresse zu überreichen.

"Wir wenden uns an alle, welche in ihrem geistigen Entwicklungsgange sein Wirken und seinen Einfluss verspürt haben, dass sie zu einer würdigen Ehrung des Jubilars beisteuern.

"Da es unmöglich ist, die Adressen aller seiner Schüler, namentlich derer, die nicht Zoologen von Fach geblieben sind, zu erlangen, so bitten wir diejenigen Herren, welche der allgemeinen Anregungen, die sie aus Leuckart's Vorlesungen in ihren Beruf mit hinausgenommen haben, in Dankbarkeit gedenken, dass sie in ihren Kreisen durch Verbreitung dieses Aufrufs in unserem Sinne thätig sind.

"Beträge werden erbeten an Herrn Carl Graubner (C. F. Winter's Verlag, Leipzig, Johannesgasse 8), welcher das Amt des Schatzmeisters freundlichst übernommen hat."

Within a few weeks of the receipt of the circular by American zoölogists I received a number of inquiries from various sources asking for further information regarding the subject, but was unable to reply to these inquiries, as I had not learned the detailed plans of the Leipzig Committee. At present, however, I can furnish some of the desired information, and, as the time is very short, will utilize the columns of SCIENCE for this purpose.

It is the intention of the Leipzig Committee to have a life-size marble bust of the Geheimrath made and to present it to him on December 13th, and it is understood that the bust will eventually be deposited in the University at Leipzig or in the Leipzig Gallery. The statue will be made by one of the most prominent sculptors of Germany, who attended Leuckart's lectures this last semester, unbeknown to the lecturer, in order to study his expression. The estimated cost is 4,000 marks, of which about 1,000 marks had been subscribed before September 1st. Should more money be collected than is necessary it will probably be spent for photographs of the bust which will be sent to persons who have forwarded subscriptions.

The subscriptions thus far made vary from 10 to 200 marks, most of them being in sums of 20 to 50 marks.

It is not intended to confine the subscriptions to Leuckart's pupils, for a number of other persons have expressed their desire to contribute. The Leipzig Committee therefore extends a cordial invitation to all admirers of the Geheimrath to join in the celebration, and I would therefore urge all of Leuckart's pupils in this country to bring this circular to the attention of their scientific and medical friends.

Subscriptions can be sent to Carl Graubner, as announced in the original circular, or to me. At the request of Dr. Simroth, the moving spirit in the undertaking, I have agreed to receive American subscriptions and forward the same in one sum to Leipzig.

CH. WARDELL STILES.

U. S. DEPARTMENT OF AGRICULTURE,
WASHINGTON, D. C.

TO THOSE INTERESTED IN QUATERNIONS AND ALLIED SYSTEMS OF MATHEMATICS.

DEAR SIRs: The mathematical ideas associated with the direct treatment of vectors and vector functions are daily becoming more familiar to the scientific mind. Half a century ago the broad principles of vector theory were laid down in the Quaternions of Hamilton and the Ausdehnungslehre of Grassmann. In his second monumental work Hamilton developed a vector calculus of great power and flexibility, peculiarly appropriate to geometry and physics; while both systems, in their richness of transformations, generality of treatment, simplicity of expression and interpretation, surpass any other known forms of mathematics. Nevertheless, these systems have not received the attention that is surely their due, and remain still in a comparatively undeveloped state.

Meanwhile, in connection chiefly with the remarkable advance in electrical theory, the growing necessity for a vector calculus, or at least for a compact vector notation, has induced more recent investigators to invent new systems, which have very much in common with those already established by Hamilton and Grassmann.

The time, therefore, seems to be ripe for a combination of forces, so that workers in these important lines may become known to one another, and the enthusiasm of students excited and sustained.

Led by these considerations we venture to suggest the organization of what we provisionally call 'the International Association for promoting the Study of Quaternions and allied systems of Mathematics.' By such an organization vector analysis would receive a great impetus. A journal published from time to time would keep the members of the Association in touch with the various aspects of the subject, both pure and applied, and would facilitate interchange of opinions on the introduction and adoption of new notations.

In these few lines we have tried to point out the important task of the Association, but shall be obliged for any suggestion or improvement. It is almost needless to say that we are only preparing the way; and once the Association has been started we shall be ready to place it in the hands of persons much more competent than ourselves to further its best interests.

We earnestly hope that all friends will appreciate our endeavors and show us at once some token of approval.

We remain, Dear Sirs,

Very respectfully yours,

P. MOLENBROEK, the Hague, Holland.

S. KIMURA, Yale University, U. S. A.

October, 1895.

N.B.—We would ask those who are in Europe to communicate with the first of the above names, and those in America with the second.

SCIENTIFIC LITERATURE.

Proceedings of the International Electrical Congress, Chicago, 1893. American Institute of Electrical Engineers. Edited by Max Osterberg.

The publication of this volume of nearly 500 pages insures a permanent record of the Chicago Electrical Congress and gives evidence of the value and importance of its work. The Congress was unique in its composition, since it consisted of both an official and an unofficial body. The 'Chamber of Delegates' was a small body rep-

resenting ten governments and composed only of those presenting duly authenticated official credentials.

It may be said in this connection that while the expenses of the official representatives of foreign governments were paid, as far as known to the writer, our own government went only so far as to appoint representatives through its Secretary of State, but neither paid expenses nor, what is of much more importance, provided in any way for the meeting of this body of officially delegated scientific men from abroad, and took no official notice of them. This neglect was a source of great chagrin to the representatives of the United States. It would be impossible in Europe, with the sentiment prevailing there respecting the official etiquette befitting such an occasion.

The papers printed in this volume constitute a valuable collection of great variety, and no one interested in the higher phases of electrical theory and practice can afford to be without them. It is gratifying to know that the sales of the 'Proceedings' have already nearly or quite met the cost of publication, while a goodly number of volumes remain in the possession of the Institute.

An omission of some importance, in view of subsequent controversies, occurs in the report of the 'Proceedings of the Chamber of Delegates.' I refer to the appointment of the committee on notation and nomenclature. The presentation of the committee's report is noted, but one looks in vain for the names of the gentlemen composing it.

Inasmuch as a committee was appointed to draw up specifications for the Clark cell, consisting of Messrs. Helmholtz, Ayrton and Carhart, it may not be amiss to explain here why this committee never reported.* The chairman, Professor von Helmholtz, it will be remembered, was seriously injured on his return trip to Europe, and this unfortunate accident delayed action. The writer, however, received finally a long official communication from him in relation to the Clark cell and the legalization of the units adopted by the Congress. The proposals of von Helmholtz were accepted by myself with some slight modifications. Some correspond-

* *Proceedings*, p. 20.